

WHAT IS CLAIMED IS:

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1. A process for forming a metal roller bearing, said process comprising the steps of:

obtaining a hardened metal cylindrical blank having end face surfaces, a lateral surface defining an outer diameter, and a centered circular bore, said bore having an inner surface defining an inner diameter;

a first hard turning step wherein the inner surface of the bore is turned to a specified inner diameter; and

a second hard turning step wherein the lateral surface of the blank is turned to a specific outer diameter.

2. The process of claim 1 wherein said second step of hard turning the lateral surface of the blank includes the formation of a radial crown.

3. The process of claim 1 wherein said blank is made of a steel material and is formed by a method selected from the group consisting of warm forging, hot forging, cold forming, and machining.

4. The process of claim 3 wherein said formed blank is heat treated.

5. The process of claim 1 wherein said blank is cold formed and comprises a pierced flash, said process further comprising:

prior to hard turning said inner surface of said bore to a specified inner diameter, removing said pierced flash.

6. The process of claim 5 wherein said removing said pierced flash is carried out by hard turning said inner surface of said bore.

7. The process of claim 1 wherein said hard turning of said inner surface of said bore is carried out using a diamond honing machine.

8. The process of claim 1 further comprising:
forming an incised cross-hatch pattern on said inner surface of said bore.

9. The process of claim 1 wherein said hard turning said lateral surface is carried out using a computer numerically controlled (CNC) lathe. The process of claim 9 wherein said lathe comprises a cubic boron nitride or ceramic cutting tool.

10. The process of claim 1 wherein said hard turning the inner surface of said bore precedes said hard turning the lateral surface of said blank.

11. The process of claim 1 wherein said hard turning the lateral surface of said blank precedes said hard turning the inner surface of said bore.

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11. The process of claim 1 wherein said hard turning the lateral surface of said blank precedes said hard turning the inner surface of said bore.